

**IN THE SPECIFICATION:**

The specification as amended below with replacement paragraphs shows added text with underlining and deleted text with ~~strikethrough~~.

Please REPLACE the paragraph beginning at page 3, line 19, with the following paragraph:

In the AGC control, the correction of the ASE 1001 is carried out by two approaches. One approach is to add a corrected voltage of the ASE 1001 to a voltage output by the PD 902 to obtain a gain set in comparison with the voltage of the PD 906. ~~Other~~ Another approach is to subtract the corrected voltage of the ASE 1001 from the voltage of the PD 902 and the voltage of the PD 906 so as to obtain a set gain.

Please REPLACE the paragraph beginning at page 6, line 19 and 22, with the following paragraph:

The optical switch 121 switches the input optical signal between sides of an EDF 130, which is an element to be tested (D.U.T), or an optical power meter 131. The optical power meter 131 detects an optical power of the optical signal with a ~~band~~ bandwidth of, for example, 1.55 micrometer ( $\mu\text{m}$ ) (1582.0 nm to 1595.5 nm) supplied from the optical signal sources 101a to 101n. The WDM filter 123 multiplexes the optical signal with a ~~band~~ bandwidth of, for example, 1.55  $\mu\text{m}$  (1582.0 nm to 1595.5 nm) supplied from the signal light sources 101a to 101n and an optical signal of, for example, 1472 nm from an excitation LD 141 so as to supply the multiplexed optical signal to one end of the EDF 130.

Please REPLACE the paragraph beginning at page 8, lines 5 and 6, with the following paragraph:

Fig. 3 is a graph to explain the signal input power dependency of the ASE power of EDF and the gross output power. A gross input power 302 ( $P_{in}$ , total) is plotted along the horizontal axis, an ASE power 301 (solid line) and a gross output power 302 (dotted line) are plotted along the vertical axis. The gain was constant (31 dB), and the temperature was 25 °C. As the gross input power was changed from -21 dBm to -11 dBm, the ASE power 301 changed from 11.5 dBm to 3 dBm. If an ASE amount of 11.5 dBm, when the gross input power was -21 dBm, is made ~~fix~~ fixed and ASE correction is performed, a target gross output when the gross input power is -16 dBm becomes:

Please REPLACE the paragraph beginning at page 8, lines 16 and 17, with the following paragraph:

Fig. 4 is a block diagram of a basic constitution of an optical amplifier of the present invention. The optical amplifier includes an optical amplifying unit 401, an optical input detecting unit 402, for monitoring an optical signal input into the optical amplifying unit 401, is provided on a fore-stage of the optical amplifying unit 401, and an optical output detecting unit 403 for monitoring an optical signal output from the optical amplifying unit 401 is provided on a post-stage of the optical amplifying unit 401.

Please REPLACE the paragraph beginning at page 9, line 25, with the following paragraph:

A control unit 404 controls driving of the excitation LD 432 based on detected signals output from both the optical input detecting unit 402 and the optical output detecting unit 403. Detected signals of the powers of the optical signals detected by the photodiode 412 of the optical input detecting unit 402 and the photodiode 422 of the optical output detecting unit 403 are input into the control unit 404. A detected signal that represents the temperature detected by the temperature detecting unit 433 of the optical amplifying unit 401 is also input into the control unit 404. The control unit 404 calculates the ASE power to be output based on the input/output power of the optical signal for the optical amplifying unit 401 and the temperature of the optical amplifying unit 401. Moreover, the control unit 404 controls driving of the excitation LD 432 based on the calculated ASE power in such a manner that the gain and output of the optical amplifier 431 have predetermined values. As a result, even if there is a change in any one or both of the temperature of the optical amplifier 431 and the signal input power (or the signal output power, or the gain), the fixed gain and output set accurately can be maintained.

Please REPLACE the paragraph beginning at page 9, line 25, with the following paragraph:

The control unit 404 includes an input correcting unit 521 and the gain calculating unit 522. The input monitor voltage  $V_{in}$ , after A/D-converting in the A/D converter 501, and the temperature monitor voltage  $V_{temp}$ , after A/D-converting in the A/D converter 502, are input into the input correcting unit 521. The result of the input correction obtained by the input correcting unit 521, and the output monitor voltage  $V_{out}$ , after A/D-converting in the A/D converter 503, are input into the gain calculating unit 522. The gain calculating unit 522 calculates a control signal for driving the LD driver unit 511 and outputs the control signal to the LD driver unit 511 via the D/A converter 504. The LD driver unit 511 outputs the excitation drive voltage  $V_{pump}$  to the excitation LD 432 based on the control signal from the gain calculating unit 522.

Please REPLACE the paragraph beginning at page 15, lines 20 and 21, with the following paragraph:

In the optical amplifier and the control method for the optical amplifier of the present invention, the input power (level) and the temperature are detected, and the ASE correction is made using them as parameters. For this reason, ASE which changes according to the change in the input power and the temperature can be corrected suitably, and a constant gain (output power) can be obtained. The present invention is ~~not~~ limited to detecting both the input power and the temperature, however, and instead can be modified to detect ~~any~~ only one of them. Even with such constitution, the ASE correction can be made more suitably than the conventional art.